

Claims

- [c1] What is claimed is:
1. An add-on card for wireless communication capable of being inserted into a personal digital assistant (PDA) comprising:
 - a rectangular housing having an opening formed on an upper side of the rectangular housing;
 - an interface connector disposed in the opening of the rectangular housing for connecting to the PDA;
 - a power-managing circuit electrically connected to the interface connector for storing charges supplied by a first direct current (DC) from the interface connector; and
 - a radio-frequency (RF) circuit enclosed in the rectangular housing and electrically connected to the interface connector for transmitting an RF signal corresponding to an electrical signal from the interface connector or transmitting an electrical signal to the PDA via the interface connector according to a received RF signal;wherein the power-managing circuit is electrically connected to the RF circuit, and when the RF circuit transmits the RF signal, the power-managing circuit provides a second DC to the RF circuit.
 - [c2] 2. The add-on card for wireless communication of claim 1 wherein a current flow magnitude of the second DC is larger than a current flow magnitude of the first DC supplied from the interface connector.
 - [c3] 3. The add-on card for wireless communication of claim 1 wherein the PDA further comprises:
 - a battery for supplying power for operating the PDA; and
 - a touch screen for displaying pictures and accepting inputs by touch.
 - [c4] 4. The add-on card for wireless communication of claim 3 wherein the power of the first DC is supplied by the battery.
 - [c5] 5. The add-on card for wireless communication of claim 1 wherein when the RF circuit does not transmit the RF signal, the power-managing circuit stops providing the second DC.

[c6] 6. The add-on card for wireless communication of claim 1 wherein the interface connector comprises a DC power terminal electrically connected to the power-managing circuit and the RF circuit for supplying the first DC; wherein when the RF circuit does not transmit the RF signal, the first DC supplies desired power of the RF circuit and charges the power-managing circuit simultaneously, and when the RF circuit transmits the RF signal, the first DC supplied from the DC power terminal of the interface connector and the second DC supplied from the power-managing circuit flow into the RF circuit simultaneously for providing the desired power of the RF circuit.

[c7] 7. The add-on card for wireless communication of claim 6 wherein the power-managing circuit comprises:
a power-storage unit electrically connected to the DC power terminal for storing the power supplied from the first DC and providing the power to the second DC; and
a bypass circuit having an input terminal electrically connected to the power-storage unit and an output terminal electrically connected to the DC power terminal and the RF circuit; when the RF circuit does not transmit the RF signal and the first DC supplies the charges, the bypass circuit prevents the current from flowing from the DC power terminal via the output terminal and the input terminal into the power-storage unit, and when the RF circuit transmits the RF signal, the bypass circuit inputs the power supplied from the power-storage unit via the input terminal and outputs the power into the RF circuit via the output terminal.

[c8] 8. The add-on card for wireless communication of claim 7 wherein the bypass circuit comprises a metal-oxide semiconductor (MOS) transistor, a source of the transistor is electrically connected to the input terminal, and a drain of the transistor is electrically connected to the output terminal; when the RF circuit does not transmit the RF signal, a reverse bias between the source and the drain of the transistor prevents the current from flowing from the DC power terminal via the bypass circuit into the power-storage unit, and when the RF circuit transmits the RF signal, a forward bias between the source and the drain of the transistor transmits the power of the power-storage unit.

- [c9] 9. The add-on card for wireless communication of claim 7 further comprising a resistor electrically connected to the DC power terminal and the power-storage unit preventing too much current flowing into the power-storage unit leaving insufficient current for the RF circuit.
- [c10] 10. The add-on card for wireless communication of claim 7 wherein the power-storage unit is a capacitor.
- [c11] 11. The add-on card for wireless communication of claim 7 wherein the power-storage unit is a rechargeable battery.
- [c12] 12. The add-on card for wireless communication of claim 1 wherein the interface connector conforms to a compact flash (CF) card specification.
- [c13] 13. An add-on card capable of being inserted into a personal digital assistant (PDA) comprising:
an interface connector capable of being inserted into and pulled out of the PDA;
a power-managing circuit electrically connected to the interface connector for storing charges supplied by a first direct current (DC) from the interface connector; and
an operating circuit electrically connected to the interface connector for controlling the add-on card wherein the operating circuit is capable of being operated in a high power consumption mode or a low power consumption mode; wherein the power-managing circuit is electrically connected to the operating circuit, and when the operating circuit operates in the high power consumption mode, the power-managing circuit provides a second DC to the operating circuit, and when the operating circuit operates in the low power consumption mode, the power-managing circuit stops providing the second DC.
- [c14] 14. The add-on card of claim 13 wherein a current flow magnitude of the second DC is larger than a current flow magnitude of the first DC supplied from the interface connector.
- [c15] 15. The add-on card of claim 13 wherein the PDA further comprises:
a battery for supplying power for operating the PDA; and
a touch screen for displaying pictures and receiving inputs by touch.

[c16] 16. The add-on card of claim 15 wherein the charges of the first DC is supplied from the battery.

[c17] 17. The add-on card of claim 13 wherein the interface connector comprises a DC power terminal electrically connected to the power-managing circuit and the operating circuit for supplying the first DC; wherein when the operating circuit operates in a low power consumption mode, the first DC supplies desired power of the operating circuit and charges the power-managing circuit simultaneously, and when the operating circuit operates in a high power consumption mode, the first DC supplied from the DC power terminal of the interface connector and the second DC supplied from the power-managing circuit flow into the operating circuit simultaneously for providing the desired power of the operating circuit.

[c18] 18. The add-on card of claim 17 wherein the power-managing circuit comprises:
a power-storage unit electrically connected to the DC power terminal for storing the power supplied from the first DC and providing the power to the second DC;
and
a bypass circuit having an input terminal electrically connected to the power-storage unit and an output terminal electrically connected to the DC power terminal and the operating circuit; when the operating circuit operates in a low power consumption mode and the first DC supplies the power, the bypass circuit prevent the current flowing from the DC power terminal via the output terminal and the input terminal into the power-storage unit; and when the operating circuit operates in a high power consumption mode, the bypass circuit inputs the power supplied from the power-storage unit via the input terminal and outputs into the operating circuit via the output terminal.

[c19] 19. The add-on card of claim 18 wherein the bypass circuit comprises a metal-oxide semiconductor (MOS) transistor, a source of the transistor being electrically connected to the input terminal and a drain of the transistor being electrically connected to the output terminal; when the operating circuit operates in a low power consumption mode, a reverse bias between the source

and the drain of the transistor prevents the current from flowing from the DC power terminal via the bypass circuit into the power-storage unit; and when the operating circuit operates in a high power consumption mode, a forward bias between the source and the drain of the transistor transmits the power of the power-storage unit.

[c20] 20. The add-on card of claim 18 further comprising a resistor electrically connected to the DC power terminal and the power-storage unit preventing too much current flowing into the power-storage unit leaving insufficient current for the RF circuit.

[c21] 21. The add-on card of claim 18 wherein the power-storage unit is a capacitor
22. The add-on card of claim 18 wherein the power-storage unit is a rechargeable battery.

[c22] 23. The add-on card of claim 13 wherein the interface connector conforms to a compact flash (CF) card specification.